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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/014,318	11/09/2001	Maria G. Pallavicini	02307O-120900US	1486

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EXAMINER	
WESSENDORF, TERESA D	

ART UNIT	PAPER NUMBER
1639	

DATE MAILED: 01/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/014,318	PALLAVICINI ET AL.	
	Examiner	Art Unit	
	T. D. Wessendorf	1639	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28* is/are pending in the application.

4a) Of the above claim(s) *17-28* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Election/Restrictions

Applicant's election with traverse of Group I claims 1-16 is acknowledged. The traversal is on the ground(s) that MPEP 803.01 states that if the claims can be examined together without undue burden, the Examiner must examine the claims on the merits even though they are directed to independent and distinct inventions. ln establishing that an undue burden would exist for co-examination of claims, the Examiner must show that examination of the claims would involve substantially different prior art searches, making the co-examination burdensome. Applicants submit that examination of the claims in Groups 1-1V would not create an undue burden. This is not found persuasive because the search is not limited to patent searches but to scientific literatures, as well, hence, examination will impose a burdensome search. The patent and scientific searches are not co-extensive. This is the more true since as admitted by applicants, the subject matters in each of the different groups are distinct and independent.

The requirement is still deemed proper and is therefore made FINAL.

Claims 17-28 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected

invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement.

Applicants' election of the following species: antibody for binding partner; B-cell library and protein epitope is noted. For essentially the same reasons as stated above, the restriction among the species in each of the subgroups is maintained.

Status of Claims

Claims 1-28 are pending in the application.

Claims 17-28 have been withdrawn from consideration as being drawn to non-elected invention.

Claims 1-16 are under examination.

Specification

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-16 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The specification fails to provide a written description of a method by which an exon for any eukaryotic genomic fragment can be identified and mapped in the gene location. Because of the known variability and complexity of each eukaryotic genes, the generalized statements provided in the specification would not suffice as an adequate written description. The instant specification even recognizes this and provides limitations in order to identify a specific exon in a specific eukaryotic gene. The specification at page 32, states that even for the specific fragments, selection was made of the fragment sizes in order to maximize enrichment of exons. Selection of the target insert size range to maximize exon display was based upon in silico analyses of the size distribution of exons in genes within the

H1 1 P1. Long fragments (>300 bp) are more likely to contain intron sequence with stop codons, which would prevent translation of displayed protein thereby reducing the diversity and complexity of the library. On the other hand, short fragments have a lower likelihood of folding into a domain structure, which could mimic the conformational epitopes that antibodies typically recognize. Thus, while longer fragments are better for domain structure, the potential problems with introns and stop codons suggests an optimal bp. The size distribution of fifteen random, unselected clones was determined using PCR. In ***theory***, it should is possible to clone all genes encoding proteins with affinity for another molecule. However, the size of the binding domains, the folding of the polypeptide and also, in some cases, the requirement of a second domain or subunit may limit which proteins can be displayed on the phage surface in an active form. (Jacobson Biotechniques). In view of the numerous factors that cannot be predicted from one gene to another for the different eukaryotes, specifically, the exon genes, the limited guidance and description in the specification is not adequate for all or any types of exons for any eukaryotic genes.

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 8-9 and 13-14 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Fack et al (J. of Immunological Method). [This rejection is based on the claimed interpretation of different subsequences of a gene coding region].

Fack discloses at page 50 a method of identifying a gene-fragment coding (exon, as claimed) from a phage display libraries comprising expressing from the library the gene coding fragment of the epitope that binds to the different antibody of Drosophila melongaster, human p53 protein, inter alia. See specifically page 44, Materials and methods up to page 47 which includes the step of mapping the expressed gene fragment. Fack discloses that using the gene-fragment phage display system affinity selection resulted in the successful determination of epitopes recognized by four different monoclonal antibodies (for summary see Table 1). Accordingly, the specific components employed in the process of Fack fully meet the broad claimed method. It is considered that the gene coding fragment of Fack

is the same as the claimed exon (i.e., a coding sequence as defined in the instant specification).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-4 and 8-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fack (J. Of Immunogical Method) in view of Buckler et al (WO 92/13071). [This rejection is based on the claimed interpretation of the exon as being part of a single eukaryotic gene].

Fack is discussed above. Fack as stated above discloses the gene fragment subsequences of different DNA encoding protein. However, Buckler discloses at e.g., page 2, lines 13- 20 a method of exon amplification that is useful for fast and efficient isolation of a coding sequence from a complex mammalian genomic DNA. See further page 7, lines 3-28; page 12, lines 1-30 and the Examples. It would have been obvious to one

having ordinary skill in the art at the time the invention was made to use a whole eukaryotic gene in the method of Fack to amplify the exon present in said eukaryotic gene for the advantage taught by Buckler, above. The advantages provided by Buckler would motivate one having ordinary skill in the art to identify an exon in a eukaryotic genome.

Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fack et al in view of Buckler as applied to claims 1-4 and 8-16 above, and further in view Winter et al (Ann. Rev. Immunol.).

Fack is discussed above. Fack does not disclose the binding partner, antibody expressed from a phage display library. However, Winter discloses at e.g., page 433 that the display of proteins as antibodies on the surface of phage results in obtaining rare phage and affinity of binding of selected antibodies is improved by mutation. Such antibodies have potential as reagents for research and therapy. Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use an antibody phage library in the process of Fack in the manner as taught by Winter. The desirable properties of using antibody phage libraries in the interaction between antigen and antibody, as

recited by Winter would motivate one having skill in the art to use said antibody phage library.

No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to T. D. Wessendorf whose telephone number is (703) 308-3967. The examiner can normally be reached on Flexitime.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Wang can be reached on (703) 306-3217. The fax phone number for the organization where this application or proceeding is assigned is (703) 308-7924.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0196.

T. D. Wessendorf
Primary Examiner
Art Unit 1639

Tdw
January 12, 2004